CABLE ADDRESS "RESEARCH"

IN YOUR REPLY PLEASE QUOTE
FILE No.....

NATIONAL RESEARCH COUNCIL
CANADA

ATOMIC ENERGY PROJECT

CHALK RIVER. ONT.

November 28, 1950.

Dr. Joshua Lederberg,
Department of Genetics,
The University of Wisconsin,
College of Agriculture,
Madison 6, Wisconsin.

Dear Joshua:

I am extremely glad that your proposed volume of reprints on microbial genetics is materializing, and will be pleased to have the two papers of mine which you mentioned (Nature 164: 150, 1949; and Genetics 33: 447, 1948) included in it.

Thanks for the news concerning recent developments. Your results with S^r/S^s heterozygotes have a bearing on the interpretation of the delayed expression of radiation induced mutations. It would seem that there is a delay quite apart from either "phenotypic delay" or "segregation delay" (since as you have shown there is no phenotypic delay in the case of S^s mutants, and in the case of colour response mutants not all are sectored colonies). From the photoreactivation data it appears that the photo-reversible mutagenic effect of u.v. does not produce gene changes until after there has been metabolic activity, and the above considerations would indicate that this is true for both the photo-reversible and the photo-stable mutagenic effects. I am beginning to wonder if induced mutation is not associated with gene reproduction in the same way as spontaneous mutation, if the effect of radiation is to produce chemicals which can react with the genes only at the critical time. We have evidence that a few sectored colony mutants arise from what are presumably single irradiated gene complements (I think I mentioned this to you), and this might mean either that a small amount of the mutagenic chemicals

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persist until the time of the second gene division, or that in the presence of the mutagenic chemical the first gene division can occasionally give rise to a mutant and a non-mutant daughter.

Your crossing experiments with other strains are very satisfying. It seemed unlikely that K-12 should be the only "perfect" bacterium.

Sincerely,

Howard

HBN/am

Howard B. Newcombe.